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July 30, 1999

HAND-DELIVERED
Ms. Magalie Roman Salas
Secretary
Office of the Secretary
FEDERAL COMMUNICATIONS COMMISSION
445 12th Street, S.W.
TW-A325
Washington, D.C. 20554.

Re: *The Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band* (IB Docket No. 99-81) – **Comments of Iridium LLC**

Dear Madam Secretary:

On June 24, 1999, we submitted Comments in the above-referenced proceeding on behalf of Iridium LLC ("Iridium") using the Commission's Electronic Comment Filing System ("ECFS"). It has subsequently come to our attention that, although the document was transmitted to the Commission in an acceptable WordPerfect file format, when the ECFS converted the document into the Adobe portable document format ("PDF") for retrieval on the system, it improperly processed certain characters and codes in the file producing serious text, formatting and pagination problems in the Comments that were ultimately made available to the public. In order to remedy these problems, and pursuant to the recommendation of the Secretary's office, I enclose five copies of Iridium's Comments in correct form and request that they be accepted as timely filed and entered into the ECFS.

Kindly stamp and return to this office the enclosed receipt copy of the filing designated for that purpose. You may direct any questions concerning this filing to the undersigned.

Respectfully submitted,

Eric T. Werner

Enclosures

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BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
The Establishment of Policies	)	IB Docket No. 99-81
and Service Rules for the Mobile	)	RM-9328
Satellite Service in the 2 GHz Band	)	

To: The Commission

COMMENTS OF IRIDIUM LLC

IRIDIUM LLC

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June 24, 1999

SUMMARY

Iridium LLC ("Iridium") herein comments on proposals and issues raised in the Commission's Notice of Proposed Rulemaking in the above-captioned proceeding ("Notice"). In this proceeding, the Commission faces a number of substantial, unprecedented challenges: assigning what is the only currently available global MSS spectrum (at least for entities seeking a U.S. space station license); assigning MSS spectrum to satellite systems of diverse technical designs (geostationary and non-geostationary, global and regional); crafting service rules that do not disadvantage new systems vis-a-vis already-licensed systems; crafting service rules that do not disadvantage U.S.-licensed systems vis-a-vis their non-U.S.-licensed competitors; crafting technical rules that will be applicable to all licensees when their systems have very different technical designs; assigning spectrum in a way that will enable and hopefully ensure a robust, competitive MSS market place in the U.S. and globally; assigning spectrum for the global systems in a way that a U.S. band plan can be accepted around the world; and ensuring that what the Commission does in this proceeding is not inconsistent with decisions on relocation of incumbents in ET Docket 95-18.

Iridium believes that the Commission's Notice includes a comprehensive analysis of the relevant issues, and Iridium commends the Commission, and particularly the International Bureau, both on the Notice and on the process the Commission undertook in advance of adoption of the Notice to obtain input from the applicants. Iridium offers below its comments on a number of the issues raised by the Commission in the Notice and considers them in light of the challenges above.

Iridium agrees with the Commission that the public interest is served best by expeditiously adopting a band plan and service rules that use engineering solutions to ensure that mutual exclusivity among qualified competing applicants for MSS spectrum in the 2 GHz band will be avoided, as required by law.

In general, Iridium agrees that the Commission's existing Big LEO rules provide a useful model for the regulation of 2 GHz MSS systems, which will possess many technical and functional similarities to Big LEO systems. Except as noted herein, Iridium believes that use of the Big LEO rules as a model will achieve the Commission's regulatory objectives without imposing undue burdens upon licensees and will help to streamline the rulemaking process and contribute to greater certainty on the part of licensees, which will be offering services similar to those offered by the Big LEO operators.

However, the instant proceeding presents difficult issues that may have a dramatic effect on the relative competitiveness of the applicants both in the U.S. and globally. These issues must be handled with special care to ensure that the Commission does not inadvertently become the arbiter of success or failure in the marketplace.

Iridium again demonstrates herein that Boeing's application for a system to provide a service for which there is no allocation should be denied.

Iridium considers each of the four possible options for assigning spectrum to the 2 GHz applicants: (1) the Flexible Band Arrangement; (2) the Negotiated Entry Approach; (3) the Traditional Band Arrangement; and (4) Competitive Bidding. As Iridium demonstrates, the Commission's Traditional Band Plan is the approach that

most effectively addresses the challenges and complex issues that confront the Commission in this proceeding and that best serves the public interest.

Iridium supports the Commission's tentative conclusion to classify as non-common carriage the space segment component of 2 GHz MSS systems and the related gateway and TT&C earth stations used to support those systems.

Finally, Iridium urges the Commission to work with Europe and other countries to ensure that all global MSS systems have equitable access to spectrum.

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To: The Commission

COMMENTS OF IRIDIUM LLC

Iridium LLC ("Iridium"), by its attorneys and pursuant to Section 1.415 of the rules of the Federal Communications Commission ("FCC" or "Commission")), 47 C.F.R. § 1.415 (1998), hereby respectfully submits its comments with respect to the issues raised in the Commission's Notice of Proposed Rulemaking in the above-captioned proceeding ("Notice").[1/] Iridium is an applicant for authority to construct and operate the MACROCELL system in the 2 GHz MSS band and has been an active participant in the Commission's proceedings to allocate spectrum for and license the next generation of mobile-satellite service ("MSS") systems to operate in the 2 GHz band.

I. INTRODUCTION

In this proceeding, the Commission faces a number of substantial, unprecedented challenges: assigning what is currently the only available global MSS spectrum (at least for entities seeking a U.S. space station license);[2/] assigning MSS

1/ *In the Matter of The Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band*, FCC 99-50, released March 25, 1999 (*Notice of Proposed Rulemaking* in IB Docket No. 99-81, RM-9328) ("Notice"). A summary of the Notice appeared in the Federal Register on April 7, 1999. 64 FED. REG. 16880 (April 7, 1999).

2/ There is unused MSS spectrum in the L Band, but the Commission has frozen U.S. applications for that spectrum and only appears inclined to entertain non-U.S. applications. *Establishing Rules and Policies for the Use of Spectrum for Mobile Satellite Service in the Upper and Lower L-band*, 11 FCC Rcd 11675 (1996) (*Notice of*

(continued...)

spectrum to satellite systems of diverse technical designs (geostationary ("GSO") and non-geostationary ("NGSO"), global and regional); crafting service rules that do not disadvantage new systems vis-a-vis already-licensed systems; crafting service rules that do not disadvantage U.S.-licensed systems vis-a-vis their non-U.S.-licensed (and apparently even un-licensed) competitors; crafting technical rules that will be applicable to all licensees when their systems have very different technical designs; assigning spectrum in a way that will enable and hopefully ensure a robust, competitive MSS marketplace in the U.S. and globally; assigning spectrum for the global systems in a way that a U.S. band plan can be accepted around the world; and ensuring that what the Commission does in this proceeding is consistent with decisions on relocation of incumbents in the 2 GHz allocation proceeding, ET Docket 95-18.[3/]

Iridium believes that the Commission's Notice includes a comprehensive analysis of the relevant issues, and Iridium commends the Commission, and particularly the International Bureau, both on the Notice and on the process the Commission undertook in advance of adoption of the Notice to obtain input from the applicants. Iridium offers below its comments on a number of the issues raised by the Commission in the Notice and considers them in light of the challenges above. Iridium believes that, when the

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2/ (...continued)
Proposed Rule Making in IB Docket No. 96-132) ("*L Band NPRM*"). Iridium recently filed a Motion to Refresh the Record in that proceeding in which it asked the Commission to reopen the record to seek additional comments on matters at issue in that proceeding. Motion to Refresh the Record, filed April 15, 1999, by Iridium LLC and Motorola, Inc., in IB Docket No. 96-132.

3/ *See, e.g., Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile Satellite Service*, FCC 98-309, released November 25, 1998 (*Memorandum Opinion and Order and Third Notice of Proposed Rule Making and Order* in ET Docket No. 95-18).

Commission considers all relevant issues in light of the challenges it faces, it will reach the conclusion Iridium has reached -- that the Traditional Band Approach is the processing alternative that best serves the public interest and allows the Commission to grant the applications of all qualified systems in a way that can be implemented globally.

However, as Iridium has previously pointed out, adoption of any of the four proposals will not resolve the issue of how the entities that receive their space segment licenses from the U.S. under any of the options will be able to access 2 GHz spectrum in Europe or in countries outside Europe where one of the LOI filers in this proceeding has already locked up all available 2 GHz global MSS spectrum. In the absence of a plan to work with other countries to harmonize 2 GHz assignments, it appears unlikely that U.S. licensees will be able to obtain outside the U.S. the spectrum that the U.S. assigns. As Iridium has previously urged, the Commission must work with Europe and it must look beyond the instant proceeding and the 2 GHz bands and consider other MSS spectrum, particularly the spectrum at issue in IB Docket No. 96-132, to accommodate all applicants and ensure a fair and competitive environment in which like MSS systems have access to like amounts of spectrum between 1 and 3 GHz.

II. THRESHOLD ISSUES

At the outset of the Notice, the Commission addresses a number of threshold issues that must be resolved in this proceeding.

A. Mutual Exclusivity

Iridium agrees with the Commission that the public interest is served best by expeditiously adopting a band plan and service rules that use engineering solutions to ensure that mutual exclusivity among qualified competing applicants for MSS spectrum

in the 2 GHz band will be avoided, as required by law.[4/] As detailed more fully hereinafter,[5/] Iridium agrees that competitive bidding would be an unworkable and undesirable method for licensing global satellite services.

As Iridium has previously explained to the Commission, use of auctions by the United States to license global MSS systems would almost certainly prompt foreign administrations to follow suit. Thus, even assuming that an applicant was successful in securing, in a U.S. spectrum auction, the spectrum it required for its system in the U.S., it would have no assurance that it would meet with similar success in the numerous other countries from which it would also need authority to operate or that other countries' auction processes would be fair, impartial, and expeditious. More importantly, applicants would have no way of calculating in advance the potential total costs for securing spectrum access around the world. The risks associated with these licensing uncertainties and incalculable costs would most certainly discourage the capital investment necessary to construct and launch global systems.

The Commission has recognized the problems inherent in using competitive bidding for global satellite systems. Since the proposals now pending for comment demonstrate that the applications of all qualified applicants can be accommodated by engineering solutions, as is discussed in greater detail below, the Commission cannot use competitive bidding to resolve mutual exclusivity.[6/]

4/ *See* 47 U.S.C. § 309(j)(6)(E).

5/ *See* discussion *infra* Section III B. 4.

6/ 47 U.S.C. § 309(j)(6)(E).

B. The ICO Petition for Expedited Rulemaking

Iridium also generally supports the approach taken by the Commission in response to ICO's Petition for Expedited Rulemaking ("Petition"). In general, Iridium agrees that the Commission's existing Big LEO rules provide a useful model for the regulation of 2 GHz MSS systems, which will possess many technical and functional similarities to Big LEO systems. Except as noted below, Iridium believes the Big LEO rules achieve the Commission's regulatory objectives without imposing undue burdens upon licensees. Moreover, the Commission's proposal simply to "apply[ ] appropriate provisions of the Big LEO rules to both Big LEO licensees and 2 GHz MSS system operators," rather than to promulgate an entirely new set of rules, will help to streamline the rulemaking process and contribute to greater certainty on the part of licensees, which will be offering services similar to those offered by the Big LEO operators.[7/]

However, as the Commission's recognizes, the desire for expeditious action must be tempered by a willingness "to take the time necessary to achieve the best results."[8/] As Iridium has noted, the instant processing round is infused with difficult challenges that may have a dramatic effect on the relative competitiveness of the applicants both in the U.S. and globally. Thus, in crafting rules for 2 GHz MSS, the Commission must take special care to ensure that it does not inadvertently become the arbiter of success or failure in the marketplace. Also, as noted below, there are some instances where the Big LEO rules cannot just be applied to 2 GHz MSS systems. In the Big LEO proceeding, the Commission confronted similar system proposals from

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7/ Notice, slip op. at 10 ¶ 13.

8/ *Id.*, slip op. at 9 ¶ 12.

applicants that were all seeking U.S. space segment licenses. That is not the case in this proceeding.

Iridium also supports the Commission's rejection of the "new entrant" criterion proposed in ICO's Petition. As Iridium has previously observed, ICO's proposed "new entrant" eligibility criterion would be unprecedented, and its adoption would effect a major change in Commission policy.[9/] The Commission has never foreclosed an incumbent satellite licensee from seeking additional spectrum in another proceeding. The proposed restriction is not justified in the instant proceeding. It would not it be an equitable basis for assignment of the available spectrum or lead to the likelihood of increased competition in the MSS marketplace.

C. Boeing's Application

Boeing seeks authority to construct, launch, and operate a system to provide aeronautical radionavigation satellite service ("ARNS") and aeronautical mobile satellite (route) service ("AMS(R)S") using a combination of the scarce 2 GHz frequencies allocated for MSS and the GPS L1 band (1565.42-1585.43 MHz).[10/] The Notice invites comment on the feasibility of Boeing's proposal to provide AMS(R)S in the 2 GHz MSS bands and the extent to which the Commission can or should provide for Boeing's

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9/ Comments of Iridium LLC on ICO Petition for Expedited Rulemaking, filed August 27, 1998, in RM No. 9328, at 7-8 ("Iridium Comments"), incorporated by reference herein.

10/ Application of The Boeing Company for Authority to Construct, Launch, and Operate a NGSO Medium Earth Orbit Satellite System in the 2 GHz MSS and in the Aeronautical Radionavigation Satellite Service, File No. 179-SAT-P/LA-97(16) ("Boeing Application").

proposed operations in the U.S. 2 GHz MSS band plan that will be developed in this proceeding.[11/]

For the reasons stated in Iridium's Petition to Deny the Boeing Application, which is incorporated by reference herein,[12/] Iridium disagrees with the Commission's conclusion that the absence of a specific AMS(R)S allocation does not bar the provision of that service in the MSS bands.[13/] Moreover, the Boeing proposal is also undesirable from a policy standpoint because it is inconsistent with the allocation adopted by the Commission in the *2 GHz MSS Allocation Order*.[14/] Accordingly, the Commission should not take any extraordinary steps to accommodate the Boeing Application in the instant processing round. The application is unacceptable and should be denied.

As the Notice acknowledges, the Boeing Application is defective because the domestic and international 2 GHz MSS allocations contain no regulatory provisions for AMS(R)S, particularly with regard to intra-network priority and preemptive access. Because Boeing is proposing a global system, the feasibility of Boeing's proposal must be considered in the international context, regardless of what private arrangements Boeing might be able to achieve domestically with respect to priority and preemption.

11/ *See* Notice, slip op. at 13-14 ¶ 22.

12/ Iridium Consolidated Comments, *infra* note 18, at 7-9. As the Notice acknowledges, Iridium was not alone in citing the regulatory deficiencies in the Boeing Application. Four other 2 GHz MSS applicants also called Boeing's proposal into question. *See* Notice, slip op. at 13 ¶ 21 & n.64 (citing Comments of Aeronautical Radio, Inc. at 4-5, Comments of Celsat at 7, Comments of Constellation Communications at 20, and Consolidated Comments of ICO at 17-18).

13/ Notice, slip op. at 13 ¶ 21.

14/ *See Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for use by the Mobile Satellite Service*, 12 FCC Rcd 7388 (1997) (First Report and Order and Further Notice of Proposed Rule Making in ET Docket No. 95-18) ("*2 GHz MSS Allocation Order*").

The Commission is right to be concerned that, absent the appropriate supporting international regulatory provisions in the 2 GHz MSS bands, the global coordination with other satellite systems and aviation authorities in other countries that would be necessary to implement priority and preemptive access throughout the world would be exceedingly difficult, if not impossible. The operation of the proposed Boeing system in the 2 GHz MSS bands also poses fundamental problems concerning overall spectrum efficiency in bands that are shared with other MSS systems. The proposed Boeing system relies on CDMA multiple access technology, and otherwise could likely share spectrum with other CDMA MSS systems, were it not for the fact that it would need to be designed to accommodate AMS(R)S preemptive priority requirements and other Commission requirements for licensing of terminals for aviation distress and safety communications. Because of the more stringent sharing criteria and enhanced interference protection levels associated with AMS(R)S operations, it is likely that the other 2 GHz MSS systems would encounter difficulties coordinating with the Boeing system. The problem would become even more complex if the Commission were to adopt a processing arrangement that allows systems to operate over the same frequency bands.

Moreover, the Boeing Application faces a significant domestic regulatory hurdle as well. As the Notice recognizes, the Commission's rules set forth the requirements for licensing of aviation distress and safety communications terminals. These rules state which frequency bands may be used for aircraft-to-satellite AMS(R)S transmissions and do not include the 1990-2025 or 2165-2200 MHz bands.[15/] Iridium is

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15/ *See* 47 C.F.R. §§ 87.187(q), 2.106 (U.S. Table of Frequency Allocations).

unaware of any pending proceeding to amend Section 87.187 or the table of frequency allocations to provide for such operations in the spectrum allocated for 2 GHz MSS, and undertaking such a proceeding at this late date would only serve to delay further the deployment of 2 GHz MSS systems and the delivery of new services to the public.

Such a delay would be contrary to the public interest and contrary to the purposes for which the Commission reallocated the 2 GHz spectrum for MSS. In the *2 GHz MSS Allocation Order*, the Commission acknowledged the projections for steadily increasing demand for MSS and allocated the 70 MHz of spectrum at 1990-2025 MHz and 2165-2200 MHz to MSS in part "to provide another option for mobile communications, and [to] provide communications to underserved areas, such as rural and remote areas where PCS, cellular, and other mobile services are less feasible."[16/] Thus, the Commission clearly contemplated that its limited allocation of spectrum would be developed to meet demand for mobile voice and personal communications services. Nothing in the *2 GHz MSS Allocation Order* even suggests that the Commission expected or intended the spectrum to be used for the AMS(R)S service proposed here by Boeing, which by design would further limit the amount of remaining MSS spectrum available for general MSS services. Boeing did not propose a range of MSS services, one of which would be consistent with AMS(R)S. Boeing's proposal is to use its system to provide a service for which there is no allocation. Thus, its application should be denied and there are no countervailing policy or public interest reasons to search for a rationale to support its grant.

16/ *2 GHz MSS Allocation Order*, 12 FCC Rcd at 7395.

D. Technical Qualifications Issues

1. *Orbit Considerations*

Recognizing the "inherent differences" that distinguish the NGSO and the GSO system proposals now pending before the Commission in this processing round, the Notice seeks comment on the Commission's tentative decision to authorize both types of systems "in relevant portions of the 1990-2025/2165-2200 MHz bands . . . ."[17/] As a general matter, Iridium supports the Commission's proposal to authorize both NGSO and GSO MSS systems for operations within appropriate and discrete portions of the spectrum allocated for 2 GHz MSS. However, Iridium urges the Commission not to authorize GSO systems to operate within the 1990-2010 MHz band.

As Iridium has previously observed, the inconsistency between the U.S. domestic MSS spectrum allocation (*i.e.*, the Region 2 allocation) and the worldwide band plan adopted at WARC-92 leaves the 20 MHz in the domestic uplink band between 1990 and 2010 MHz as the only domestic frequencies that coincide with the global allocation and, thus, that will support a global system.[18/] The Notice correctly observes that GSO systems possess necessarily limited geographical coverage, making them capable of providing only a regional service.[19/] In light of the numerous applicants in this processing round now proposing global 2 GHz MSS systems, it would be an inefficient use of spectrum to authorize GSO systems within these global MSS frequencies.

17/ Notice, slip op. at 12 ¶ 17.

18/ Consolidated Comments and Petition to Deny of Iridium LLC, filed May 4, 1998, in FCC File Nos. 179-SAT-P/LA-97(16), 90-SAT-AMEND-98, *et al.*, at 5 ("Iridium Consolidated Comments").

19/ Notice, slip op. at 12 ¶ 17.

2. *Coverage Requirements*

Similarly, Iridium supports the Commission's proposals relative to the coverage requirements applicable to NGSO and GSO systems.[20/] However, Iridium notes that the Commission's proposal to require systems using only GSO satellites to provide coverage only within the contiguous 50 states, Puerto Rico, and the U.S. Virgin Islands only serves to underscore the inappropriateness of assigning to such systems spectrum within the global 2 GHz MSS allocation.

III. THE APPROPRIATE BAND ASSIGNMENT MECHANISM

A. Guiding Considerations

The Commission recognizes that authorizing MSS systems for use of the 2 GHz band to provide mobile satellite services in the U.S. presents highly complex and often competing telecommunications policy objectives and issues. Nevertheless, the Commission concludes, and Iridium agrees, that the Commission can assign spectrum to all of the pending 2 GHz MSS proposals and grant each of the applications.[21/] Iridium respectfully submits that the most critical objectives that the 2 GHz MSS band plan framework must satisfy are: (1) the creation of a pro-competitive regulatory environment; (2) assurance of an open telecommunications marketplace consistent with the World Trade Organization ("WTO") Agreement on Basic Telecommunications; (3) a fair and equitable opportunity for all 2 GHz MSS service providers (both foreign and domestic) to provide services; and (4) a band assignment plan that can be implemented around the world.

20/ *Id.* ¶¶ 18-19.

21/ If the Boeing application is denied, there will be additional spectrum to be assigned to the qualified applicants.

To realize these objectives, the Commission necessarily must assure that its licensing process and the rules ultimately adopted for the 2 GHz MSS band do not advantage one applicant at the expense of others, and that they will be easily understood, can be easily followed, and can be practically coordinated outside the U.S. The most effective way to accomplish this is to ensure that each qualified licensee has guaranteed access to a specific amount of spectrum sufficient to operate its system. It must be noted, however, that whatever approach is adopted in the U.S. will not result in a competitive global marketplace unless spectrum is assigned equitably outside the U.S.

Moreover, the assignment plan that will be adopted by the Commission in this proceeding must recognize the impact that the timing of each licensee's access to spectrum and the amount of spectrum available to each licensee at the outset can have on competition among those licensees. Failure to do so will likely result in significant, artificial market distortions that may skew the competitive landscape for the U.S. and global MSS industries for years to come.

The band plan framework to be adopted by the Commission must also recognize and address the peculiar problems created by the various classes of incumbent users that occupy different segments of the 2 GHz MSS band. The domestic incumbents in these bands have designed and built telecommunications systems that serve the public interest. While the Commission should certainly strive to make spectrum available as quickly as practicable to support new and innovative technologically advanced MSS systems, it must also ensure that the services now being provided by the incumbents are not jeopardized. Similarly, the Commission must avoid disparate impacts upon

individual MSS licensees as a consequence of the particular characteristics of the incumbents occupying a licensee's specific frequency assignment.

Finally, as developed more fully hereinafter, the Commission's band plan for 2 GHz MSS must recognize and address the fact that the allocation and use of the 2 GHz MSS bands are not uniform throughout the world and that the licensing of MSS systems at 2 GHz overseas is not occurring on a parallel track with this proceeding. Indeed, unlike most other satellite licensing activities where the United States leads the world, in the 2 GHz band the U.S. finds itself somewhat "behind the curve." At least one LOI filer in this proceeding is already reportedly securing exclusive access to 2 GHz global MSS spectrum outside the U.S. that will prevent U.S. space segment licensees from obtaining access to 2 GHz spectrum outside the U.S.[22/]

Most notably, Europe, through the MSS band-plan process adopted by the Conference of European Postal and Telecommunications Administrations (the "CEPT"), has already established an assignment plan governing the use of the 2 GHz MSS bands. As discussed more fully later in these comments, certain CEPT decisions present serious competitive obstacles for U.S. 2 GHz MSS licensees seeking to serve the CEPT countries (and other countries that may follow the CEPT decisions) in the near term.

Recognizing that several applicants in the instant proceeding have proposed MSS systems designed to provide global services, the Commission must adopt licensing arrangements that will support U.S. licensee access to spectrum needed to

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22/ Iridium is pessimistic about the likelihood of U.S. 2 Ghz licensees obtaining access to 2 GHz spectrum outside the U.S., which is why Iridium asks the U.S. to work with other countries and to look at all available MSS spectrum including unused MSS spectrum controlled by one of the LOI filers in this proceeding.

provide global services around the world.[23/] In its quest to ensure competition in the MSS market domestically and open the U.S. MSS marketplace to non-U.S. licensees, the Commission must not abdicate its responsibility to ensure that all applicants have a reasonable chance to gain equitable access to the spectrum needed to enable them to compete fairly in the global marketplace.

B. Processing Alternatives

The Commission has proposed four possible options for assigning spectrum to the 2 GHz applicants: (1) the Flexible Band Arrangement; (2) the Negotiated Entry Approach; (3) the Traditional Band Arrangement; and (4) Competitive Bidding. For the reasons discussed more fully hereinafter, the fourth alternative -- Competitive Bidding -- simply is not viable for the licensing of 2 GHz MSS systems in the U.S. The remaining alternatives all contain various elements of sound spectrum management practices. However, as the following discussion makes clear, the Commission's Traditional Band Plan approach most effectively addresses the range of complex issues that confront the Commission in this proceeding and would therefore best serve the public interest.

The proposals demonstrate a recognition on the Commission's part of the advantages of building a channel assignment methodology that is consistent with the majority of applicants' systems. Iridium agrees that a 1.25 MHz basic assignment segment is a logical choice and should enable *relative* ease in establishing a straightforward partitioning of the 2 GHz MSS bands for space segment assignment purposes. However, the Commission should also recognize that a 1.25 MHz

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23/ *See L-Band NPRM*, 11 FCC Rcd 11675, 11681 ¶ 14 (1996) (observing that the public interest requires that an MSS license carry with it some reasonable expectation that it will permit the holder to implement its system).

assignment segment may make it very difficult for 2 GHz MSS licensees to coordinate sharing arrangements with incumbent terrestrial fixed service ("FS") licensees in the 2165-2200 MHz band. At these frequencies, incumbent terrestrial systems operate on channels with 3.5 and 3.6 MHz bandwidths (between 2165 and 2180 MHz) and on 0.8 and 1.6 MHz bandwidths (between 2180-2200 MHz). Thus, unless all the incumbent FS operators are relocated prior to operation of the downlink MSS systems at 2165-2200 MHz,[24/] the disparities between the channel bandwidths of MSS and FS operators' respective systems will lead to overlapping channels. In that event, it is entirely possible that an individual FS incumbent's system will experience interference from two or even three different MSS systems.

Iridium also concurs with the Commission's proposal to accommodate GSO MSS systems in those parts of the 2 GHz MSS bands that are allocated in Region 2 only (2010-2025 MHz uplink and 2165-2170 MHz downlink). Iridium agrees with the Commission's assessment that, even if GSO MSS systems are part of a global service concept, individual satellites that comprise the system are inherently restricted to serving a particular area. Thus, it is both a logical and sound spectrum management practice to assign GSO systems MSS spectrum that is regional in scope.

In the event an applicant licensed (or, in the case of an LOI filer, otherwise authorized) by the Commission is ultimately unable to bring its system to market and forfeits its license, Iridium believes that the spectrum identified with that authorization

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24/ In its comments in ET Docket No. 95-18, Iridium has urged the Commission to require all incumbents to vacate the 2 GHz MSS band by a date certain prior to the commencement of MSS operations in the band. *See* Comments of Iridium LLC in ET Docket No. 95-18, filed February 3, 1999, at 2 (comments on *Third Notice of Proposed Rulemaking*).

should revert back to the designated core spectrum for that type of system. Thus, for example, if an NGSO CDMA licensee relinquishes its license, that licensee's spectrum should be returned to the core NGSO CDMA spectrum. The Commission can then determine if the public interest would be better served by allowing the spectrum in question to be used by another already-licensed NGSO CDMA system or systems (whether operating or progressing toward operations in compliance with milestone obligations) or whether to allow new entrants the opportunity to obtain a license to operate an NGSO CDMA MSS system.

Iridium believes that most systems will be designed with enough flexibility to readily permit additional spectrum to be used effectively in their operation. Under no circumstances should the Commission subsequently adopt any hybrid band assignment approaches developed by system proponents who are applicants to the current proceeding, unless such approaches are agreed to by all applicants.

Finally, before addressing the relative merits of the specific processing alternatives, it is important to recognize that the Commission's proposed processing arrangements do not affect all MSS licensees equally. This disparate impact stems in part from the fact that the 2 GHz MSS downlink band in the U.S. is encumbered by two different types of fixed services -- Common Carrier and Private Operational Fixed Service ("POFS"). The Common Carrier users in the band generally consist of cellular radio providers performing cell-site interconnections, while POFS users often include railroads, pipelines, electric utilities, and also state and local governments and public safety users that can be especially difficult to relocate. The ability of these fixed services successfully to coordinate and share spectrum with MSS operators differs from one type of incumbent class to another. On the uplink side, Broadcast Auxiliary Service

("BAS") incumbents' use of Channels 1 and 2 (in the MSS uplink band between 1990 and 2025 MHz) also is not uniform throughout the U.S. This lack of uniformity in the use of 2 GHz MSS bands by various incumbent groups, and the need to effectuate sharing arrangements or to relocate these incumbents will affect MSS licensees differently unless the incumbents are relocated prior to commencement of mobile satellite service at 2 GHz, as Iridium has proposed in its comments in ET Docket No. 95-18.

1. *Post-Licensing Coordination (Negotiated Entry)*

The Commission's proposed Negotiated Entry approach has distinct and substantial advantages for only one system -- the first system operating. Under this approach, the Commission would authorize each applicant to operate across the entire 2x35 MHz of U.S. MSS spectrum, and then each licensee coordinates its entry into, and usage of, the band with incumbents and any other MSS licensees that have reached market earlier. Applicants would negotiate among themselves for the spectrum to satisfy their requirements. While perhaps appealing on its face, such a plan presents clear risks to fair competition.

For example, the first licensee to enter the band could reach coordination agreements with non-U.S. MSS systems that will make it extremely difficult, if not impossible, for subsequent MSS providers to coordinate their systems. Likewise, the first-in licensee could reach agreements with terrestrial incumbents that would preclude subsequent MSS providers from operating in major portions of the MSS bands: these later entrants would be forced to use band "slivers" situated between coordinated spectrum occupied by the first MSS entrant and spectrum assigned to the terrestrial incumbents. Moreover, the Negotiated Entry approach neither recognizes the benefits

that accrue to systems employing CDMA multiple access technology by operating at contiguous frequency bands nor does it guarantee that regional GSO systems will be operated in the regional-only 2 GHz MSS in Region 2.

Most importantly for global systems, the negotiated entry approach does not provide any means to redress the issue of U.S. systems' current consideration in the European 2 GHz MSS spectrum until 2005 as a consequence of the CEPT band plan, discussed in greater detail below. Indeed, the Negotiated Entry approach would compound the problem of inequitable spectrum access. The CEPT band plan does not contain any provisions for negotiated entry or other post-licensing arrangements. Thus, an entity that secures access to the one-half of the European 2 GHz MSS band that becomes available by the 2001 deadline (which almost certainly excludes every U.S.-licensed system) has absolutely no duty to undertake post-licensing negotiations in order to afford later entrants access to the spectrum prior to the opening of the second half of European 2 GHz MSS spectrum in 2005.

The same successful early entrant into Europe would also likely be positioned to be one of the first entrants into the U.S. market. The Negotiated Entry approach would afford such a licensee a daunting commercial advantage by facilitating its control of all 2 GHz MSS spectrum in the U.S. and in Europe. A licensee with control over such large amounts of spectrum would have little motivation to effect coordination on a global basis. History shows that post-licensing MSS coordination is fraught with problems requiring continuing regulatory attention. The Commission merely has to look at its own record in the matter of the lower L-band coordination with Inmarsat to see evidence of this fact.

Recognizing that the U.S.-licensed systems will be far behind non-U.S. systems that do not even need space segment licenses, the Commission must acknowledge and be concerned that a Negotiated Entry assignment plan means that there will be very few competitive global MSS systems in the 2 GHz band. That concern alone should be sufficient to reject this proposed processing plan.

2. *Flexible Band Arrangement*

Another proposed processing plan put forward by the Commission is the Flexible Band arrangement. Under this alternative each applicant would initially receive 2x2.5 MHz of spectrum in the "core bands" associated with its proposed system type, with additional "growth" spectrum obtained as need is established by the individual provider. Spectrum for CDMA applicants would be grouped to allow contiguous CDMA core spectrum, and GSO applicants would be put into Region 2-only core spectrum. Joint TDMA/CDMA applicants (Iridium and Globalstar) would have to decide on what proportions of TDMA and CDMA spectrum they would require.

On the surface, the Flexible Band arrangement appears effectively to combine fairness in initial assignment with efficient spectrum use. However, closer scrutiny of the proposal reveals that it suffers from most if not all of the objections and concerns that are inherent in the Negotiated Entry approach. The Flexible Band approach does not address the concerns relative to lack of access to European spectrum and other post-licensing coordination issues; it merely presents them at the "sub-band" level. Under this proposal, as in the Negotiated Entry approach, systems would be initially allowed to operate across their entire core spectrum, subject to coordination with other systems that have previously commenced operations in the core bands.

Moreover, the Commission's discussion of this approach leaves one very important issue decidedly unclear. Specifically, at the beginning of Paragraph 32 in the Notice, the Commission states that "[e]ach operator would be guaranteed the exclusive use of its primary spectrum assignment upon commencement of operations . . . ."[25/] However, the Commission later in the same paragraph proposes that "in addition to the primary spectrum segment, [it] would authorize systems to operate across their respective core band, subject to coordination with other systems that have commenced operation in that core band. In such coordination, each operational system would have priority in coordination of its primary spectrum and equal rights in coordination of the remaining core spectrum."[26/]

The underscored passages quoted above appear to be contradictory or are, at the very least, confusing. The Commission's reference to a licensee's "priority in coordination of its primary spectrum" is incompatible with a right to exclusive use of that spectrum band. One MSS licensee should not be forced to coordinate with another MSS licensee in order to access the core spectrum it was exclusively assigned by the Commission. This is a fundamental issue in this proceeding because, unless the FCC settles the issues surrounding relocation of incumbents prior to permitting MSS operations to commence, by permitting the first-in operator access to the entire core spectrum, the Commission is harming all subsequent operators who will in all likelihood find themselves bound to mutually exclusive coordination arrangements between the first-in operator and incumbent fixed service operators. The effect of this approach would be plainly discriminatory. If the Commission adopts this approach, it should

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25/ Notice, slip op. at 17 ¶ 32 (emphasis added).

26/ *Id.* (emphasis added).

clarify that any earlier entrant into the band that is using core spectrum assigned to another licensee must vacate that spectrum immediately upon that assigned licensee's entry into the band.

3. *Traditional Band Approach*

Clearly the most sensible and fair band assignment approach suggested by the Commission is the Traditional Band Plan. In this approach, each of the nine applicants would receive 2x3.75 MHz of spectrum in the 2 GHz MSS bands.[27/] Spectrum for CDMA applicants would be grouped to allow contiguous CDMA spectrum and use of the contiguous blocks by all CDMA licensees, although it would be expected that a joint TDMA/CDMA licensee would not have access to all, if any, of the contiguous CDMA spectrum that might be assigned. Licenses for GSO 2 GHz MSS operations would be granted only in the Region 2 segments of the spectrum (upper part of the uplink band and lower part of the downlink band). Joint TDMA/CDMA applicants (Iridium and Globalstar) would need to state how much of their 2x3.75 MHz would be TDMA and how much would be CDMA.

The Traditional Band Plan appears to offer the best approach for licensing 2 GHz MSS applicants at this time. The certainty that it provides to licensees will foster outside investment and help operators to optimize their system designs. Moreover, it facilitates and simplifies the coordination process. It enables licensees to determine with whom they must coordinate. It provides the needed information required to determine who, where, and how many, incumbent systems must be considered in coordination arrangements. In the event a system fails to reach the market for any

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27/ This assumes that all nine applications/LOIs are granted.

reason, the Commission retains the ability to determine in the future how best to utilize the spectrum assigned to that system based on policy priorities then in place. More importantly, the Traditional Band Plan avoids the problems associated with permitting the first-in licensee to exercise total control over the entire U.S. 2 GHz MSS band (Negotiated Entry approach) or over substantial segments of it (Flexible Band arrangement) in a potentially anti-competitive manner. It allows all systems initially to have access to the same amount of spectrum. More importantly, it is easily understood, easily duplicated, easily implemented, and easily coordinated outside the U.S. It is the one approach that recognizes and reflects that the U.S. is licensing multiple global MSS systems.

4. *Competitive Bidding*

Finally, in the highly unlikely event the Commission determines that it is in the public interest to assign the 2 GHz MSS spectrum by competitive bidding rather than any of the other approaches, the Commission also solicits comment on various aspects of an auction scheme that it might employ.[28/] In particular, the Commission seeks input on such issues as general auction design; the pairing of frequencies for auction; whether the number of licenses or spectrum an individual bidder could acquire should be limited; whether the Commission's general auction rules in Part 1, Subpart Q should be employed; and whether separate licensees that desire to aggregate their spectrum to facilitate co-frequency sharing arrangements should be permitted to bid as a group on combinations of licenses.[29/]

28/ *See* Notice, slip op. at 21 ¶ 46.

29/ *See id.*, slip op. at 21-22 ¶¶ 46-48.

Iridium does not comment herein on any of the specific topics identified by the Commission because the Commission has already determined, and Iridium agrees, that engineering solutions exist that would permit all nine proposals to be granted. Thus, the Commission, by law, cannot conduct an auction.[30/] Moreover, even if the Commission found mutual exclusivity, competitive bidding should not be used. As the Commission's previous inquiries into satellite spectrum auctions have demonstrated, competitive bidding is not an efficient or appropriate mechanism for licensing global services and its use for this purpose would be contrary to the public interest.

Iridium is on record with the Commission in WT Docket No. 97-150[31/] and, earlier, in IB Docket No. 96-220[32/] opposing the use of auctions to select licensees from among mutually exclusive MSS applicants.[33/] In these proceedings, Iridium has demonstrated that auctioning spectrum for MSS licenses will not hasten the development or deployment of new services because of the global nature of MSS service. Use of competitive bidding in the present context would do nothing more than confer on the prevailing bidder a license to operate in the United States -- only one of about two hundred licenses that an MSS operator would need to operate a global system.

30/ 47 U.S.C. § 309(j)(6)(E).

31/ *Inquiry on Competitive Bidding Process for Report to Congress*, WT Docket No. 97-150.

32/ *In the Matter of Amendment of Part 25 of the Commission's Rules to Establish Rules and Policies Pertaining to the Second Processing Round of the Non-Voice, Non-Geostationary Mobile Satellite Service*, 11 FCC Rcd 19841 (1996) (Notice of Proposed Rulemaking in IB Docket No. 96-220) ("*NVNG NPRM*").

33/ *See* Comments of Iridium LLC in WT Docket No. 97-150, filed August 1, 1997, at 1; *see also* Comments of Iridium LLC in IB Docket No. 96-220, filed December 20, 1996, at 5-9.

Use of auctions in the U.S. would actually impede deployment of global services because of the high probability that other countries would follow suit. The prospect of a series of sequential auctions by other administrations would create profound uncertainty for potential service providers and their investors. A winning bidder in the U.S. would have no assurance that it would also be able to prevail in auctions held by foreign administrations, and therefore it could not be certain that it would be able to obtain any or all of the licenses necessary to effectuate its business plan. Moreover, a potential service provider would have no way of calculating in advance what its ultimate cost of securing necessary licenses would be, thereby affecting its ability to attract investors.

The Commission itself recognized the problem created by this uncertainty in its Notice of Proposed Rulemaking in IB Docket No. 96-220.[34/] Moreover, Congress has also expressed its opposition to the use of competitive bidding for assigning global satellite spectrum both in the U.S. and abroad. Section 633 of Senate Bill 376 now pending before the Senate provides that:

> Notwithstanding any other provision of law, the Commission shall not assign by competitive bidding orbital locations or spectrum used for the provision of international or global satellite communications services. The President shall oppose in the International Telecommunications [sic] Union and in other bilateral and multilateral fora any assignment by

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34/ *NVNG NPRM*, 11 FCC Rcd at 19869 ¶¶ 80-81. Moreover, this problem and others that would result from employing auctions for global MSS spectrum have been catalogued in detail in a study prepared and submitted for the record in WT Docket No. 97-150. *See* Strategic Policy Research, *Public Harms Unique to Satellite Spectrum Auctions*, March 18, 1996 (filed March 21, 1996, by the Satellite Industry Association in WT Docket No. 97-150).

> competitive bidding of orbital locations of spectrum used for the provision of such services.[35/]

The House of Representatives expressed the same sentiment in identical terms last year in House Bill 1872.[36/] Moreover, the Committee Report for that measure stated that:

> [t]he Committee believes that auctions of spectrum or orbital locations could threaten the viability and availability of global and international satellite services, particularly because concurrent or successive spectrum auctions in the numerous countries in which U.S.-owned global satellite service providers seek downlink or service provision licenses could place significant financial burdens on providers of such services. This problem could be compounded by the fact that the multi-year period required for the design, construction and launch of global and international satellite systems usually requires service providers to invest substantial resources well before they obtain all needed worldwide licenses and spectrum assignments. The uncertainty created by spectrum auctions could disrupt the availability of capital for such projects, and significantly reduce the available benefits offered by global and international satellite systems.[37/]

As the Notice correctly acknowledges, the Commission's statutory mandate obligates it to explore alternatives such as engineering solutions, negotiations, threshold qualifications, and service regulations in order to avoid mutual exclusivity in application and licensing proceedings before it decides to employ auctions.[38/] In the present processing round, a wide array of alternative potential licensing methodologies exist, any of which would make auctions unnecessary. Accordingly, the Commission

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35/ S. 376, 106th Cong., 1st Sess. § 633 (1999).

36/ H.R. 1872, 105th Cong., 2nd Sess. § 649 (1998).

37/ H.R. REP. NO. 494, 105th Cong., 2d Sess. 64-65 (1998).

38/ Notice, slip op. at 7 ¶ 6 (citing 47 U.S.C. § 309(j)(6)(E)).

need not and should not consider auctions as means to award licenses for 2 GHz MSS systems.

IV. NON-SERVICE LINK ISSUES

A. Ka-Band Feeder Links

In the Notice, the Commission raises a number of issues with respect to the feeder link proposals of numerous applicants.[39/] However, Iridium will limit its comments to the issues that arise within the context of those applications that propose feeder links utilizing frequencies within the Ka-Band.

In the Notice, the Commission states that Celsat has requested 850 MHz of uplink feeder link spectrum in the Ka-Band between 27.5 and 28.35 GHz and 850 MHz of downlink feeder link spectrum in the Ka-Band between 17.7 and 18.35 GHz.[40/] This overlooks a recent amendment that Celsat filed, which proposes use of 850 MHz of bandwidth anywhere across the uplink band from 27.5 to 30.0 GHz and another 850 MHz anywhere across the downlink band from 17.7 to 20.20 GHz.[41/] As so amended, Celsat's application presents potentially serious conflicts with Iridium's pending

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39/ *See id.*, slip op. at 23-31.

40/ *Id.*, slip op. at 23 ¶ 50 (table).

41/ *See* SAT-AMD-19980123-00009. Celsat's amendment appeared on public notice on March 16, 1999. *See* Public Notice, Report No. SAT-00012, released March 16, 1999 ("Ka-Band Public Notice").